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Original article

Influence of socioprofessional category on the duration of sick leave after hallux surgery. A prospective study of 102 cases



W. Graff^{a,*}, D. Biau^b, Q. Manach^a, the French Association of Foot Surgery (AFCP)^c

^a Groupe hospitalier Diaconesses Croix Saint-Simon, 125, rue d'Avron, 75020 Paris, France

^b Inserm U1153, université Paris-Descartes, groupe hospitalier Cochin, 27, rue du Faubourg Saint-Jacques, 75014 Paris, France

^c Clinique du Parc, 155, ter, boulevard Stalingrad, 69006 Lyon, France

ARTICLE INFO

Article history:

Accepted 2 May 2014

Keywords:

Hallux

Sick leave

Socioprofessional category

ABSTRACT

Introduction: Surgery of the forefoot including the hallux involves procedures on one bone or more. Usually bone union occurs within 45 days after surgery. During convalescence, the patient can gradually return to his/her activities. The duration of sick leave (SL) can be used to evaluate the influence of convalescence on professional life. The goal of this study was to evaluate the influence of the socioprofessional category (SPC) on the duration of SL after surgery of the forefoot including the hallux.

Patients and methods: This was a single center, single surgeon prospective cohort study performed between January 2012 and March 2013. It included working patients over 18 who underwent hallux surgery associated or not with surgery of the lateral rays. A standardized questionnaire was filled out during the postoperative day 45 consultation to determine factors that could influence the duration of sick leave. Regression models (Cox model) were used to identify variables associated with the duration of sick leave.

Results: Among the operated patients, 102 were included and divided into 5 SPC. SL lasted a mean 45 days (from 8 to 90 days). The only predictive factors for the duration of SL on multivariate analysis using SPC 2 as a reference were SPC and the VAS (Visual Analogue Scale). The mean duration of SL was 15 days for SPC 2, 35 days for SPC 3, 47 days for SPC 4, 50 days for SPC 5 and 67 days for SPC 6.

Discussion–Conclusion: The distribution of SPC was comparable to that of the working population in the Île de France. The SPC appears to be a predictive factor for the duration of SL after hallux surgery. Severe pain seems to increase the duration of SL. Surgeons and patients should be informed accordingly.

Level of evidence: Level IV.

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1. Introduction

In France, more than 10,000 hallux operations are performed annually. Surgery of the forefoot including the hallux involves several bones. The postoperative outcome and the process of initiating weightbearing depend on the type of surgery and the surgeon's usual practices [1,2].

For the moment, the development of less invasive techniques has not resulted in a faster return to activities [3]. Bone union usually occurs within 45 days and the risks of mechanical complications are greatest during this period. Fear of weightbearing varies

from one patient to another and influences the length of time necessary to walk normally again, and begin non-traumatic daily and professional activities.

The duration of sick leave (SL) provides an indication of the impact that convalescence has on professional life and indirectly on the patient's social life. It is often difficult to precisely predict how long postoperative SL will be, because it is multifactorial. The socio-professional category (SPC) has been shown to affect the duration of SL for other diseases [4–7]. However, there are probably other predictive factors of the duration of SL. It is important to be aware of them to inform patients and perhaps influence the duration of the SL, thus reducing the costs of this disease to society and to the professional sector.

The goal of this study was to evaluate the influence of the different factors, in particular SPC on the duration of SL after surgery of the forefoot including the hallux.

* Corresponding author.

E-mail addresses: wgraff@hopital-dcss.org (W. Graff), david.biau@cch.aphp.fr (D. Biau), quentinmanach@hotmail.fr (Q. Manach).

2. Materials and methods

This was a single center, single surgeon prospective cohort study performed from January 2012 to March 2013 including working patients over 18 who underwent surgery of the hallux (metatarsal osteotomy \pm phalangeal, metatarsophalangeal arthrodesis) associated or not with the lateral rays (lateral metatarsal osteotomies, interphalangeal arthroplasties, tendon lengthening or transfer). Rest with the foot kept up and restricted total weightbearing was recommended for the 8 first days, then walking in jogging shoes was allowed for all patients, except those who had undergone metatarsophalangeal arthrodesis who wore a postoperative boot for six weeks. Sick leave was prescribed until the control consultation on postoperative day 45, but patients were allowed to return to work after 15 days. A standardized questionnaire was filled out during the pre- and postoperative consultations ([Appendix A](#)). Patients who had not returned to work were contacted by telephone one month later on the (75th day). When both feet were operated within a short period (7–14 days), the duration of the SL was counted from the day of the first intervention. Univariate and multivariate semi-parametric Cox regression analyses were performed to identify variables associated with the duration of SL. The dependent variable was the duration of SL. The independent variables were: age, type of surgery, uni- or bilateral surgery, type of hospitalization (hospitalization or ambulatory), the maximum level of pain felt (visual analogical scale) (VAS) noted 8 days after surgery by the nurse during the first bandaging session, the SPC (level 1 of the SPC 2003 [professions and socioprofessional categories] from INSEE [Institut national de la statistique et des études économiques]), and the means of transportation to get to work. The variables that were found to be associated in univariate models ($P < 0.2$) were used in the multivariate model. Survival time with return to work was used as the event of interest and the

delay between surgery and returning to work were computed with Kaplan-Meier estimator.

3. Results

One hundred and two of the 416 patients who underwent surgery during this period were working and were included in the study. All of the other patients were retired or not working. Mean age was 52 years old. Interventions on the hallux included 96 scarf osteotomies (94%) associated in 82 cases with an osteotomy of the first phalanx and 6 metatarsophalangeal arthrodeses (6%). One or more lateral metatarsal osteotomies were performed in 12 cases (12%) and one or several interphalangeal arthroplasties in 24 cases (24%). These tendon operations were not taken into account. Only one foot was operated on in 68 cases (67%) and both feet 7 to 14 days apart in 34 cases (33%). The delay between operations was 7 days for 26 patients (76%) and 14 days for 8 (24%). Surgery was ambulatory in 76 cases (75%) and with two nights of hospitalizations in 26 cases (25%). The mean maximum pain during the 8 days after surgery was 3 (0–8). It was considered to be moderate (0–3) in 78 cases (76%), strong in 21 cases (21%) and severe in 3 cases (3%). The distribution of the different SPC is shown in [Table 1](#). The trip to work took a mean 38 minutes. The type of transportation was walking or biking in 13 cases (13%), mass transit in 66 cases (65%) and car in 23 cases (22%). Specific types of shoes were needed in 8 cases (8%). SL lasted a median 45 days (minimum 6 days, maximum 90 days). Survival times are shown in [Fig. 1](#): 5% of the patients returned to work by the 2nd week, 15% by the 4th, 43% by the 6th, and 83% by the 8th. Multivariate analysis showed SPC and maximum pain to be associated with the duration of SL ([Fig. 2](#)). The mean duration of SL in relation to the SPC and the relationship with instantaneous risk (hazards ratio) are shown in [Table 1](#). The relationship of instantaneous risk to the VAS was 0.90 (0.81–0.99; $P = 0.039$). The variables of age,

Table 1
Distribution of operated patients into socioprofessional categories (level 1).

Code	Level 1 – List of socioprofessional categories	Number	Mean sick leave (days)	Hazards ratio
2	Artisans, skilled craftsman, merchants/entrepreneur commerçants et chefs d'entreprise	3	15	Reference category/catégorie de référence
3	Executives and high level intellectual professionals professions/et professions intellectuelles supérieures	19	35	0.12 $P = 0.003$
4	Middle level professionals	35	47	0.07 $P < 0.001$
5	Employees	44	50	0.05 $P < 0.001$
6	Routine occupations	1	67	0.002 $P = 0.001$

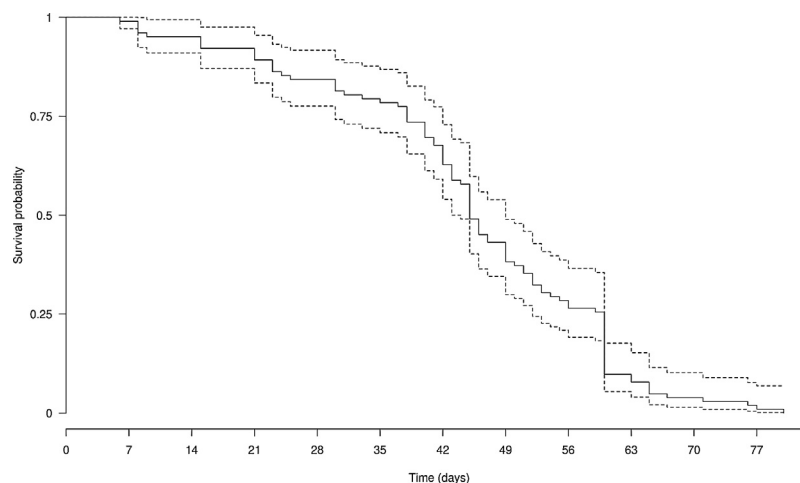


Fig. 1. Survival without return to work.

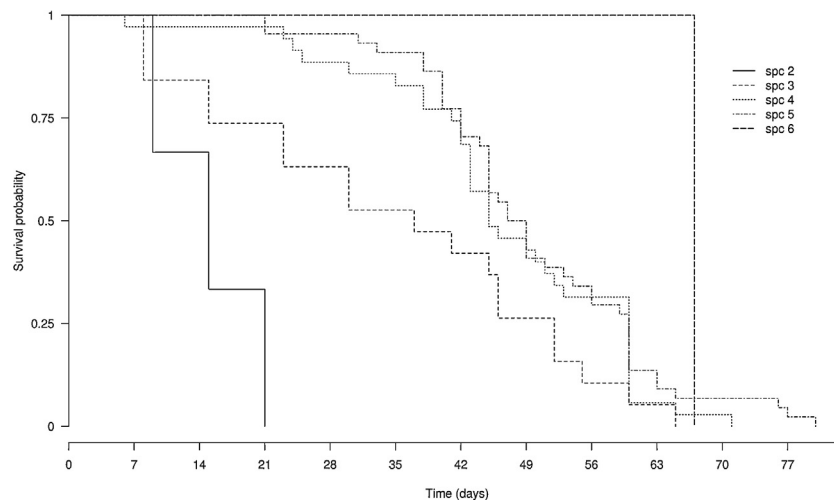


Fig. 2. Survival without return to work in relation to socioprofessional category.

type of surgery, uni- or bilateral surgery, type of hospitalization, and types of transportation to get to work were not significantly associated with the duration of SL. Overall, the patients with a SPC of 3–6 had a higher risk of extending their SL, as well as those with a peak of severe pain (VAS > 7) in the first eight days after surgery.

4. Discussion

The SPC appears to be a predictive factor of the duration of SL after surgery of the forefoot including the hallux. The severity of pain was the second factor that could increase the duration of SL. Sensitivity to pain is a preoperative factor that is difficult to evaluate [8]. Improving prevention and pain management might reduce the duration of SL. None of the other parameters in this study significantly influenced the duration of SL, in particular associated lateral ray surgery or metatarsophalangeal arthrodesis. The number of arthrodeses in this study was limited but the conclusions were similar to those by Desmarchelier et al. [1]. The distribution of our patients into different SPC was similar to that of the working population in the Île de France evaluated by INSEE in the 2007 census. The increase in duration of SL in relation to the SPC code was similar to the results found for other diseases [4–7]. The mean time to travel to work was higher than the estimated mean for the Ile de France of 23 mn [9]. Our patients were also more urban than that population because the car was used in 22% compared to 72% and mass transit in 65% compared to 13.3% [9]. Whatever the type of transportation or the length of the trip, this did not influence the duration of SL. The mean duration of SL was less than or equal to that found in the literature [3] in particular compared

to so-called mini-invasive and percutaneous techniques. There is no notion of “difficulty” in relation to the SPC that could influence the ability to return to work. In response to the directive dated February 4, 2011 in application of L. 161-39 of the National health insurance code [10], the recommendations for prescribing sick leave are based on work classified as light, moderate or heavy physical labor depending on the weight carried. This does not correspond to any existing French classification. It is based on Spanish and Anglo Saxon references. The recommended sick leave times are slightly shorter than those in our study. We feel that the SPC is less subjective and easier to apply. There are no results showing that the amount of weight carried increases along with the SPC code.

To determine the duration of postoperative SL as accurately as possible, a prospective multicenter study including all surgical procedures used should be performed.

5. Conclusion

The SPC appears to be a predictive factor for the duration of SL after surgery of the forefoot including the hallux. A peak of severe postoperative pain also played a role. None of the other parameters studied influenced the duration of SL. The duration of SL increased as the SPC classification increased.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

Appendix A. Questionnaire on the 45th day.

Date of Surgery:



Date of Surgery:

Type of Surgery:

1st ray: ☐ Scarf + P1 ☐ Arthrodesis MP1

Lateral rays: 2

3

4

5

Side ☐ Right ☐ LeftHospitalization: ☐ Day Clinic ☐ Hospitalization

Maximum pain

0	1	2	3	4	5	6	7	8	9	10
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Profession :

- 10 Farmer
- 21 Skilled worker
- 22 Shopkeeper and those of equivalent grade
- 23 Business owner 10 or more workers
- 31 Independent workers or those of equivalent grade
- 32 Managers in the public sector, intellectual and artistic professions
- 36 Business executives
- 41 Middle managers in teaching, health and the public sector and those of equivalent grade
- 46 Middle managers in administrative occupations and sales
- 47 Technicians
- 48 Foremen, supervisors
- 51 Public sector workers
- 54 Administrative workers in the private sector
- 55 Salesmen
- 56 Employees in direct services or individuals
- 61 Skilled laborers
- 66 Non skilled laborers
- 69 Agricultural workers

Means of transport: ☐ Walking ☐ Bus ☐ Subway ☐ Train ☐ Car

Transportation time: min

Safety shoes: ☐ Yes ☐ No

Duration of sick leave: Days

Type of Surgery:											
1 st ray:	<input type="checkbox"/> Scarf + P1									<input type="checkbox"/> Arthrodesis MP1	
Lateral rays: 2											
	3										
	4										
	5										
Side	<input type="checkbox"/> Right									<input type="checkbox"/> Left	
Hospitalization:	<input type="checkbox"/> Day Clinic									<input type="checkbox"/> Hospitalization	
Maximum pain	0	1	2	3	4	5	6	7	8	9	10
Profession:											
10	Farmer										
21	Skilled worker										
22	Shopkeeper and those of equivalent grade										
23	Business owner 10 or more workers										
31	Independent workers or those of equivalent grade										
32	Managers in the public sector, intellectual and artistic professions										
36	Business executives										
41	Middle managers in teaching, health and the public sector and those of equivalent grade										
46	Middle managers in administrative occupations and sales										
47	Technicians										
48	Foremen, supervisors										
51	Public sector workers										
54	Administrative workers in the private sector										
55	Salesmen										
56	Employees in direct services or individuals										
61	Skilled laborers										
66	Non skilled laborers										
69	Agricultural workers										
Means of transport:	<input type="checkbox"/> Walking	<input type="checkbox"/> Bus	<input type="checkbox"/> Subway	<input type="checkbox"/> Train	<input type="checkbox"/> Car						
Transportation time:	min										
Safety shoes:	<input type="checkbox"/> Yes									<input type="checkbox"/> No	
Duration of sick leave:	Days										

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